

LNG Trade Prospects in the Atlantic Basin

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Punchlines

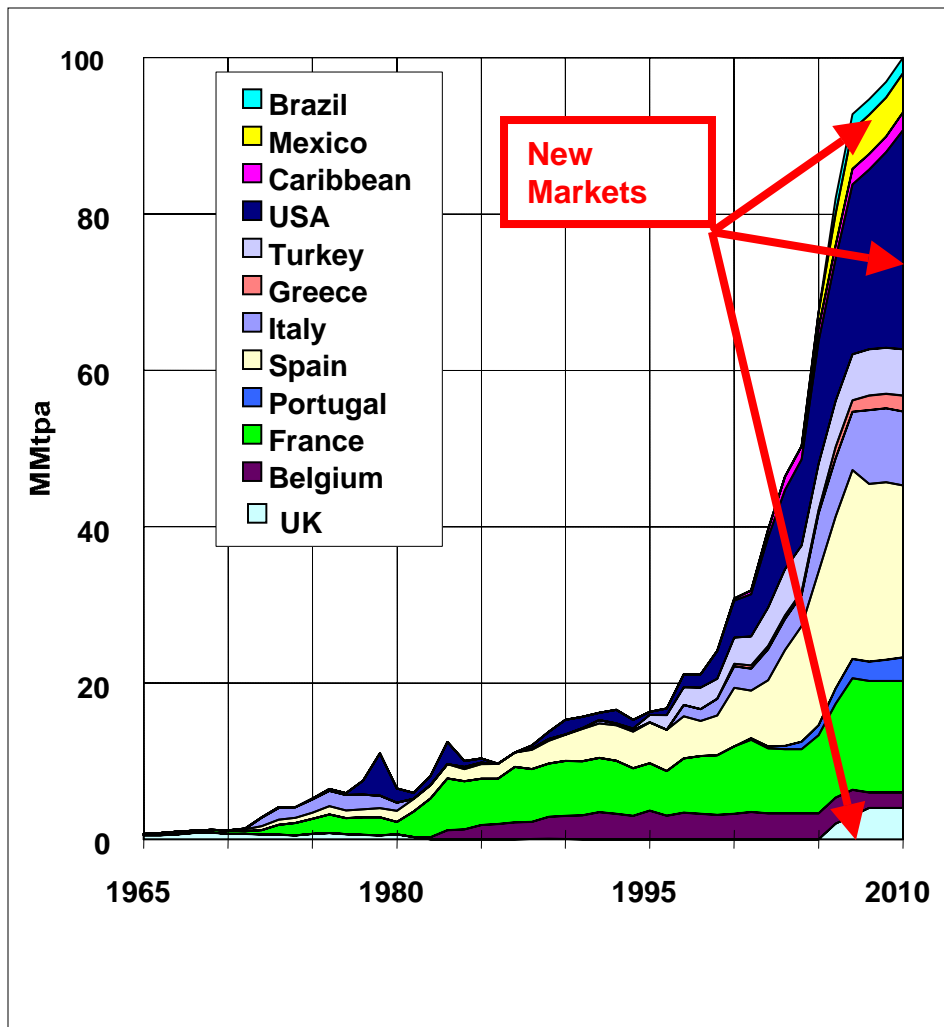
- Atlantic LNG -- volume and facilities
 - Trade volume will triple by 2010
 - Supply – flood of new projects
 - Europe import capacity to triple
 - Big question – No. American import capacity
- Trading and commerce – new markets, new models
- LNG significance – supply, liquidity, competition, arbitrage



Volumes and facilities

Atlantic LNG trade -- from 30 Mtpa (1.5 Tcf/y) today to 100+ Mtpa (5+ Tcf/y) by 2010

Atlantic LNG Imports Projected to 2010



Source: Atlantic Basin LNG Outlook to 2010, Poten & Partners

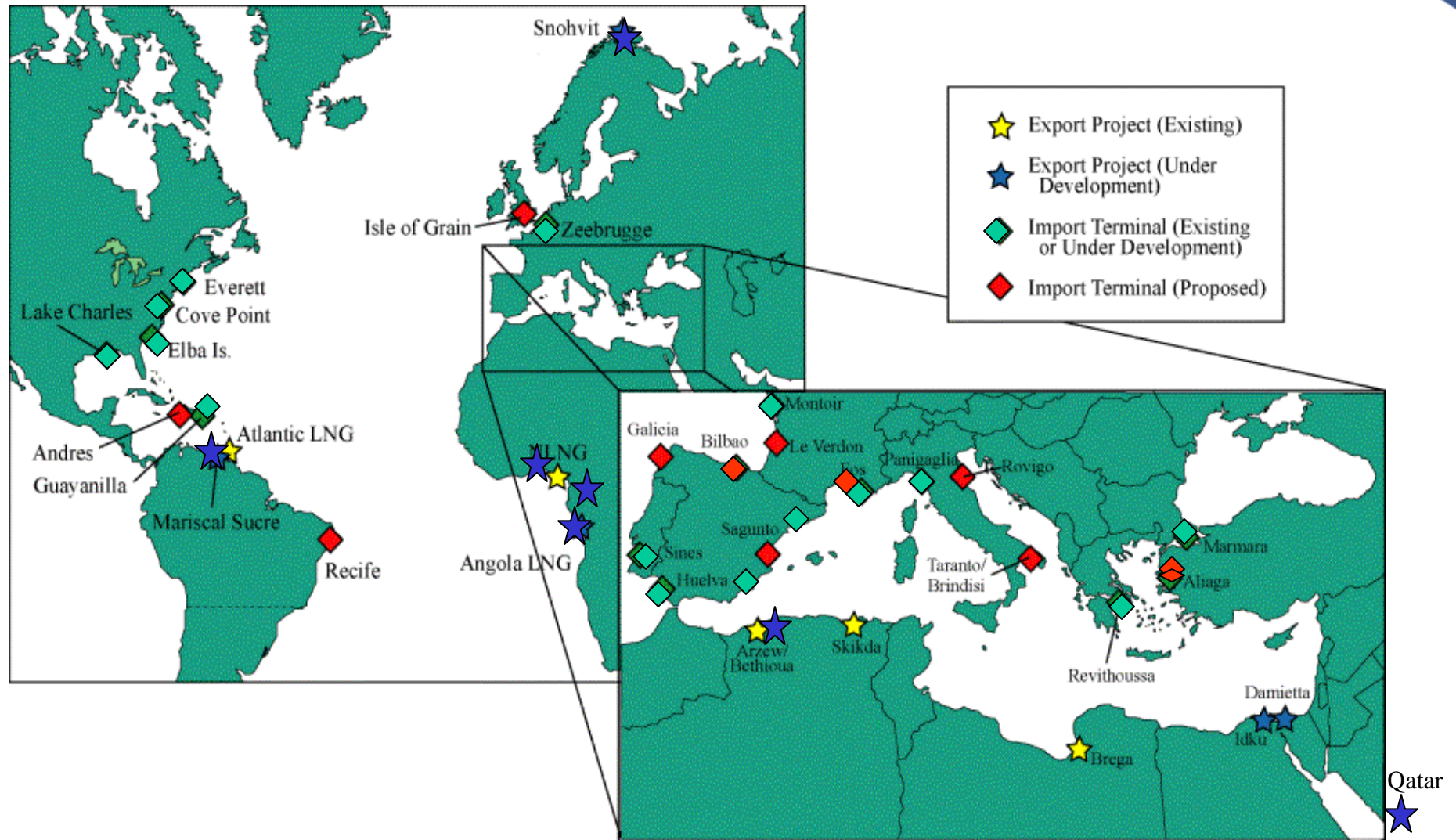
- Europe to 60 MMtpa
 - Big growth in Iberia
 - Coming growth in France and Italy
 - Import facilities and supply mostly committed
- North America – 40+ MMtpa
 - US/Caribbean existing terminals at 28MMtpa
 - US, Canada, Mexico terminals big uncertainty

New supply

- Nigeria (NLNG) and Trinidad
 - new grassroots in 1999
 - expansions now
 - more coming
- Committed
 - Norway (Snohvit)
 - Egypt (Dammietta and Idku)
 - RasGas (to Italy), Qatargas (to UK)
- Developing
 - Algeria
 - Africa – Nigeria Brass, Angola LNG, Eq. Guinea
 - Venezuela – Mariscal/Sucre

Supply is not resource limited -- for inland market prices above \$3-\$3.50/MMBtu, long-run supply curve is flat for a long way

Flood of new European import projects and export projects



Big question

-- No. American import terminals

- Big pause – departure of “energy merchants” – Enron, EL Paso, CMS, Dynegy
- Big help – Deepwater Act, FERC relax open access/open season
- US existing, 4 terminals at 26 MMtpa
- New Brunswick (Canada) Chevron/Irving, 4 MMtpa
- Bahamas, 3 competing, Tractabel probably ahead, 6+ MMtpa
- Florida (BP) ?
- LA (Hackberry), Sempra, 10 MMtpa
- El Paso offshore “energy bridge”?
- Offshore Gulf gravity-based, ChevronTexaco 7-14 MMtpa
- Texas coast (Cheniere), 3 sites each 4 – 14 MMtpa
- Altamira (Mexico) Shell, 4 MMtpa

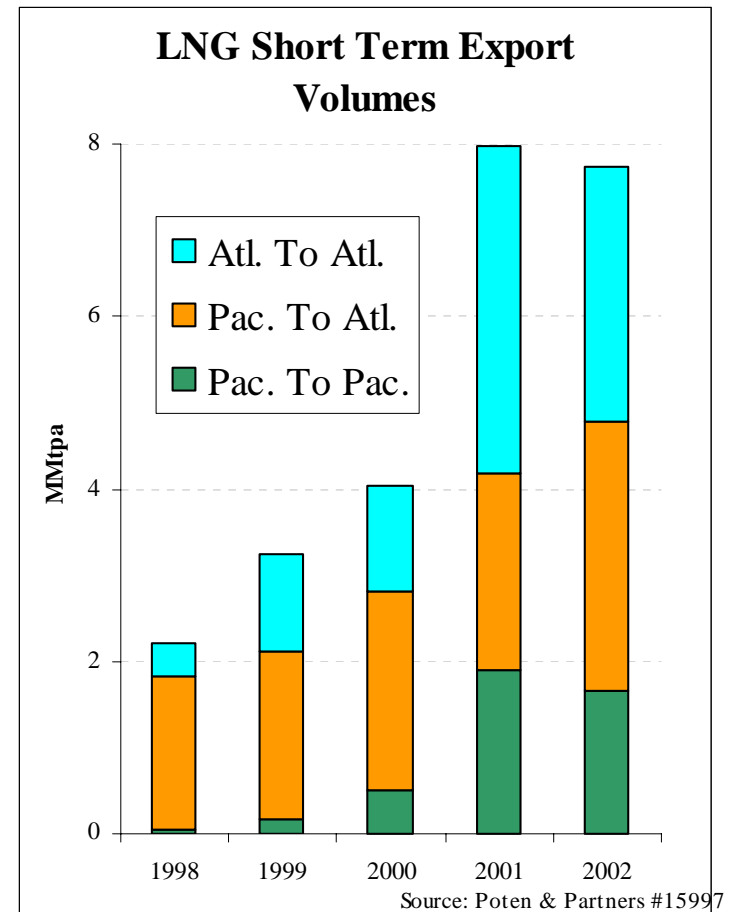
Could be 70 MMtpa (3.5 Tcf/y) or more by 2010



Trading and commerce

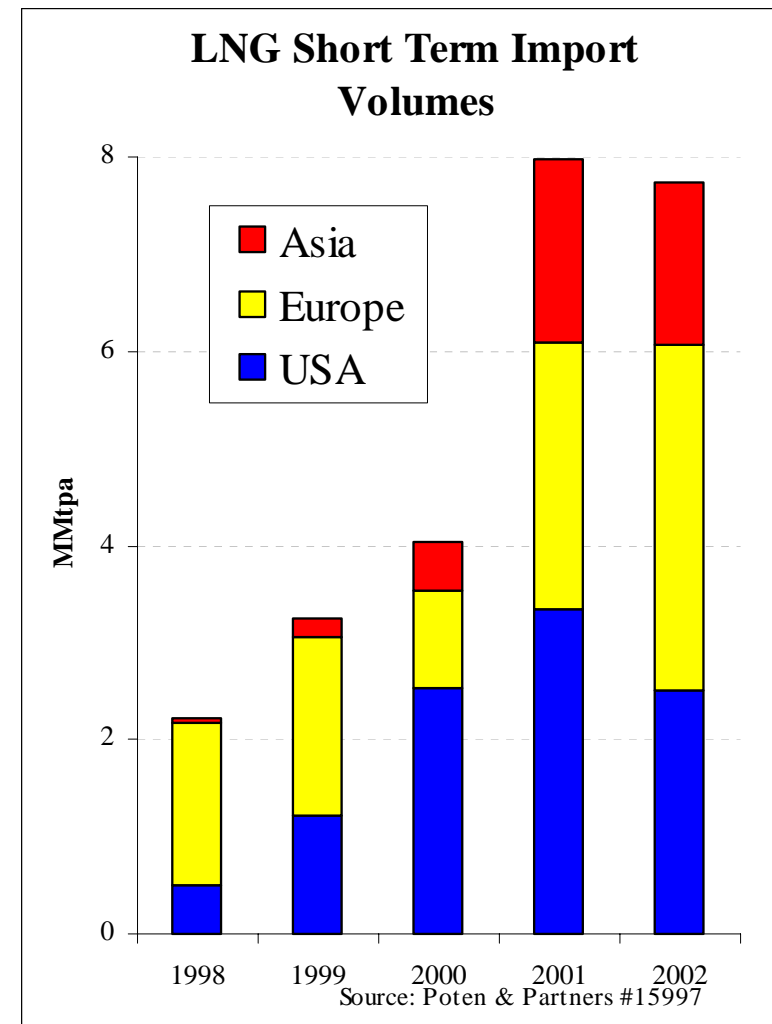
Growing Short-term Supplies

- From 2 to 8 MMtpa in 4 years
- Asia/Pacific supply largely to Atlantic
- Growing Atlantic short-term supply, from new projects in Nigeria and Trinidad



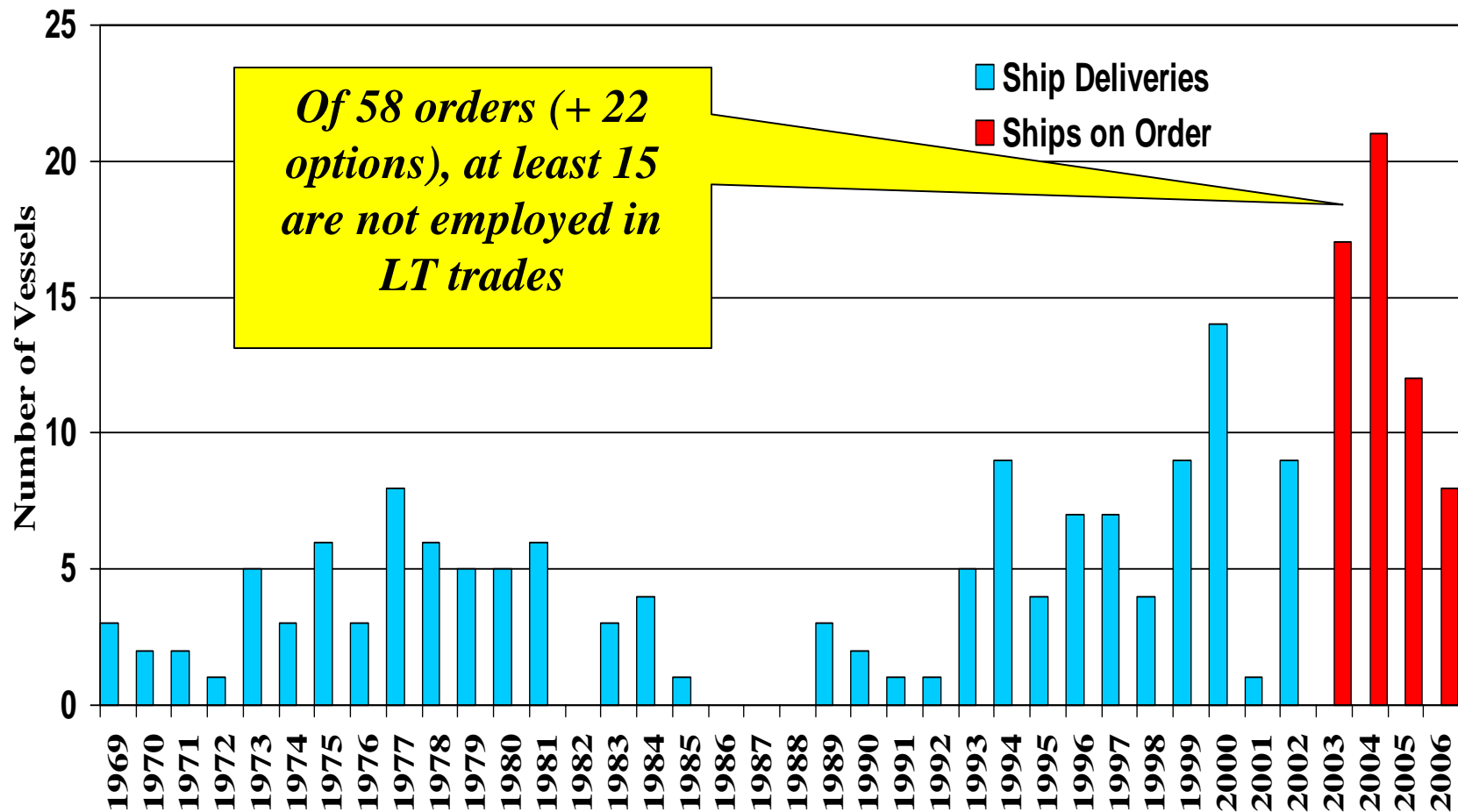
Growing short-term markets

- Growing US liquidity offers markets for global spare supply capacity
- Shift to Europe in 2002 reflects opportunistic exploitation of oil-based prices
- Asia import mostly Korea reflecting winter shortfall and stalled long-term contracting



Aggressive expansion of the LNG Fleet...

74,000m³ and above (end 2002)





Significance

Why now?

- LNG supply business changed
 - Project costs down by 50% due to scale and design efficiency
 - Since 1996, supply projects commit with part of capacity unsold
 - Flood of shipping with – with some for trading
- Deepening Atlantic gas markets
 - Transparent, liquid US market
 - Europe -- deregulation/open access, demand-side dash to gas
- Broadened scope of LNG market
 - Proliferations of supplies and uncommitted capacity
 - Proliferation of import markets

Implications

- LNG **supply**, at 5+Tcf/y by 2010 becomes significant
- LNG **competition** will affect continental gas pricing
 - In Europe where long-term contracts are now indexed to oil
 - In USA, where adequate P/L supply is uncertain
- LNG **arbitrage** is the only physical mode for continental gas/electricity value – embedded “real option” value in trading chain
- LNG **merchant traders** emerge with supply, import capacity, and **shipping** for trading – Shell, BP, BG, and Tractabel

Atlantic LNG – the emerging “nexus” energy market